

AMENDMENTS TO THE CLAIMS:

Claim 1 (currently amended): A composition comprising:

- (a) a 2-cyanoacrylate monomer of the formula $H_2C=C(CN)-COOR$, wherein R is selected from the group consisting of C_{1-15} alkyl, alkoxyalkyl, cycloalkyl, alkenyl, aralkyl, aryl, allyl and haloalkyl groups,
- (b) a metallocene component,
- (c) a polymerisingly effective amount of a photoinitiator component other than the metallocene component to render the composition capable of photocuring in air upon exposure to at least one type of electromagnetic radiation selected from the group consisting of ultraviolet light, visible light, electron beam, x-ray and infrared radiation, [and]
- (d) one or more sulfur-containing compounds selected from the group consisting of sulfonates, sulfinites, sulfates, and sulfites, and
- (e) polymethyl methacrylate.

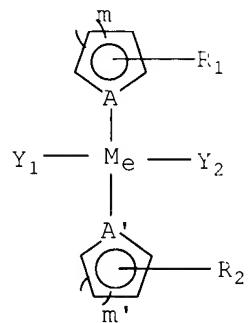
Claims 2-3 (previously cancelled)

Claim 4 (previously amended): The composition according to Claim 1, wherein the 2-cyanoacrylate monomer is selected from the group consisting of methyl cyanoacrylate, ethyl-2-cyanoacrylate, propyl cyanoacrylates, butyl

cyanoacrylates, octyl cyanoacrylates, allyl-2-cyanoacrylate, β -methoxyethyl-2-cyanoacrylate and combinations thereof.

Claim 5 (previously amended): The composition according to Claim 1, wherein the 2-cyanoacrylate monomer is ethyl-2-cyanoacrylate.

Claim 6 (currently amended): The composition according to Claim 1, wherein the metallocene component includes materials within the following structure:



wherein R₁ and R₂ occur at least once on each ring, are the same or different and are selected from the group consisting of H; any straight- or branched-chain alkyl constituent having from 1 to about 8 carbon atoms; acetyl; vinyl; allyl; hydroxyl; carboxyl; -(CH₂)_n-OH, wherein n is an integer in the range of 1 to about 8; -(CH₂)_n-COOR₃, wherein n is an integer in the range of 1 to about 8 and R₃ is a member selected from the group consisting of H; Li; Na; any straight- or branched-chain alkyl constituent having from 1

to about 8 carbon atoms; $-(\text{CH}_2)_{n'}$, wherein n' is an integer in the range of 2 to about 8; $-(\text{CH}_2)_n-\text{OR}_4$, wherein n is an integer in the range of 1 to about 8 and R_4 is any straight- or branched-chain alkyl constituent having from 1 to about 8 carbon atoms; and $-(\text{CH}_2)_n-\text{N}^+(\text{CH}_3)_3\text{X}^-$, wherein n is an integer in the range of 1 to about 8 and X is selected from the group consisting of Cl^- , Br^- , I^- , ClO_4^- and BF_4^- ;

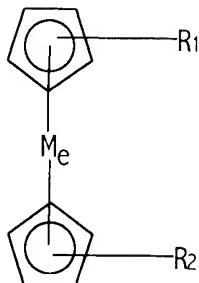
Y_1 and Y_2 [may or may not be present, but] are optional and when present at least once are the same or different and are selected from the group consisting of H, Cl^- , Br^- , I^- , cyano, methoxy, acetyl, hydroxy, nitro, trialkylamines, triarylamines, trialkylphosphines, triphenylamine, and tosyl;

A and A' are the same or different and [may be] are C or N;

m and m' are the same or different and [may be] are 1 or 2; and

M_e is a member selected from the group consisting of Fe, Ti, Ru, Co, Ni, Cr, Cu, Mn, Pd, Ag, Rh, Pt, Zr, Hf, Nb, V and Mo.

Claim 7 (currently amended): The composition according to Claim 1, wherein the metallocene component includes materials within the following structure:

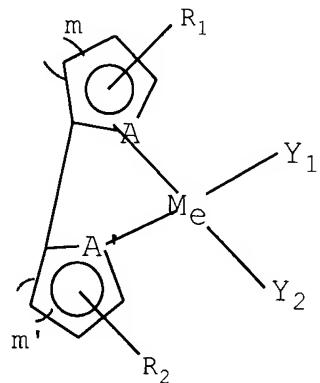


wherein R₁ and R₂ are the same or different, and each is a member selected from the group consisting of H; any straight- or branched-chain alkyl constituent having from 1 to about 8 carbon atoms, acetyl; vinyl; allyl; hydroxyl; carboxyl; -(CH₂)_n-OH, wherein n is an integer in the range of 1 to about 8; -(CH₂)_n-COOR₃, wherein n is an integer in the range of 1 to about 8 and R₃ is a member selected from the group consisting of any straight- or branched-chain alkyl constituent having from 1 to about 8 carbon atoms, H, Li, Na, or -(CH₂)_{n'}, wherein n' is an integer in the range of 2 to about 8; -(CH₂)_n-OR₄, wherein n is an integer in the range of 1 to about 8 and R₄ is any straight- or branched-chain alkyl constituent having from 1 to about 8 carbon atoms; and -(CH₂)_n-N⁺(CH₃)₃ X⁻, wherein n is an integer in the range of 1 to about 8 and X is a member selected from the group consisting of Cl⁻, Br⁻, I⁻, ClO₄⁻ and BF₄⁻; and

Me is a member selected from the group consisting of Fe, Ti, Ru, Co, Ni, Cr, Zr, Hf, Nb, V and Mo.

Claim 8 (original): The composition according to Claim 6, wherein M_e is selected from the group consisting of Ti, Cr, Cu, Mn, Ag, Zr, Hf and Mo.

Claim 9 (currently amended): The composition according to Claim 1, wherein the metallocene component includes materials within the following structure:



wherein R_1 and R_2 occur at least once on each ring, are the same or different and are selected from the group consisting of H; any straight- or branched-chain alkyl constituent having from 1 to about 8 carbon atoms; acetyl; vinyl; allyl; hydroxyl; carboxyl; $-(CH_2)_n-OH$, wherein n is an integer in the range of 1 to about 8; $-(CH_2)_n-COOR_3$, wherein n is an integer in the range of 1 to about 8 and R_3 is a member selected from H; Li; Na; any straight- or branched-chain alkyl constituent having from 1 to about 8 carbon atoms; $-(CH_2)_n'$, wherein n' is an integer in the range of 2 to about

8; $-(CH_2)_n-OR_4$, wherein n is an integer in the range of 1 to about 8 and R₄ is any straight- or branched-chain alkyl constituent having from 1 to about 8 carbon atoms; and $-(CH_2)_n-N^+(CH_3)_3 X^-$, wherein n is an integer in the range of 1 to about 8 and X is a member selected from the group consisting of Cl⁻, Br⁻, I⁻, ClO₄⁻ and BF₄⁻;

Y₁ and Y₂ [may or may not be present, but] are optional and when present at least once are the same or different and are selected from the group consisting of H, Cl⁻, Br⁻, I⁻, cyano, methoxy, acetyl, hydroxy, nitro, trialkylamines, triarylamines, trialkylphosphines, triphenylamine, and tosyl;

A and A' are the same or different and [may be] are C or N;

m and m' are the same or different and [may be] are 1 or 2; and

M_e is selected from the group consisting of Fe, Ti, Ru, Co, Ni, Cr, Cu, Mn, Pd, Ag, Rh, Pt, Zr, Hf, Nb, V and Mo.

Claim 10 (original): The composition according to Claim 9, wherein R₁ and R₂ are each H; Y₁ and Y₂ are each Cl; A and A' are each N; m and m' are each 2; and M_e is Ru.

Claim 11 (previously amended): The composition according to Claim 1, wherein the metallocene component is

selected from the group consisting of diaryl phosphino metal-complexed ferrocenes, bis-alkyl ferrocenes, and $M_e[CW_3-CO-CH=C(O^-)-CW']_2$, wherein M_e is a member selected from the group consisting of Fe, Ti, Ru, Co, Ni, Cr, Cu, Mn, Pd, Ag, Rh, Pt, Zr, Hf, Nb, V and Mo, and W and W' are the same or different and are selected from the group consisting of H and halogen.

Claim 12 (previously amended): The composition according to Claim 1, wherein the metallocene component is a member selected from the group consisting of ferrocenes, titanocenes, and combinations thereof.

Claim 13 (previously amended): The composition according to Claim 1, wherein the metallocene component is ferrocene.

Claim 14 (previously amended): The composition according to Claim 1, wherein the photoinitiator component is selected from the group consisting of 1-hydroxycyclohexyl phenyl ketone, 2-methyl-1-2-morpholino propan-1-one, benzophenone, 2-benzyl-2-N,N-dimethylamino-1-(4-morpholinophenyl)-1-butanone, 2,2-dimethoxy-2-phenyl acetophenone, bis(2,6-dimethoxybenzoyl-2,4,4-trimethyl pentyl) phosphine oxide, 2,4,6-trimethylbenzoyldiphenyl-phosphine oxide, bis(2,4,6-trimethyl benzoyl) phenyl phosphine oxide, 2-hydroxy-2-methyl-1-phenyl-propan-1-one, alkyl pyruvates, aryl pyruvates and combinations thereof.

Claim 15 (previously cancelled)

Claim 16 (original): The composition according to Claim 1, further comprising a member selected from the group consisting of viscosity-modifying agents, rubber toughening agents, thixotropy rendering agents, thermal stabilizing agents and combinations thereof.

Claim 17 (previously amended): The composition according to Claim 1, wherein the composition is useful as an adhesive, a sealant or a coating.

Claim 18 (previously amended): A method of polymerizing a composition, said method comprising the steps of:

(a) providing an amount of the composition according to Claim 1: and

(b) subjecting the composition to a sufficient amount of said electromagnetic radiation to cure the composition.

Claim 19 (previously amended): The composition according to Claim 1 in a one-part formulation.

Claim 20 (previously amended): The composition according to Claim 1, wherein the cyanoacrylate monomer includes ethyl-2-cyanoacrylate which is present in an amount within the range of about 97.9% by weight to about 99.4% by weight of the total composition, the metallocene component is ferrocene which is present in an amount of about 0.1% by

weight of the total composition, the photoinitiator component includes the combination of bis(2,6-dimethoxybenzoyl-2,4,4-trimethyl) pentyl phosphine oxide and 2-hydroxy-2-methyl-1-phenyl-propan-1-one which is present in an amount in the range of about 0.5% to about 2% by weight of the total composition, and the sulfur-containing compound is present in an amount in the range of about 0.1% to about 10% by weight of the total composition.

Claim 21 (previously amended): The composition according to Claim 1, wherein the cyanoacrylate component includes: ethyl-2-cyanoacrylate which is present in an amount within the range of about 98.715% to about 98.75% by weight of the total composition and BF_3 , in an amount within the range of about 0.04% to about 0.075% by weight of the total composition, the metallocene component is ferrocene which is present in an amount of about 0.02% by weight of the total composition, the photoinitiator component includes the combination of bis(2,6-dimethoxybenzoyl-2,4,4-trimethyl) pentyl phosphine oxide and 2-hydroxy-2-methyl-1-phenyl-propan-1-one which is present in an amount of about 1.2% by weight of the total composition, and the sulfur-containing compound is present in an amount in the range of about 0.1% to about 10% by weight of the total composition.

Claim 22 (previously amended): A reaction product formed from the composition according to Claim 1, after

exposing the composition to electromagnetic radiation effecting to cure the composition.

Claim 23 (currently amended): An article assembled with a composition according to Claim 1, selected from the group consisting of needles, syringes, lancets, hypodermics, injectors, bodily fluid collector sets, cannula/hub assemblies, cannula/tube assemblies, tube sets, intravenous sets, fluid delivery and withdrawal sets, suction tubes, anesthesia masks, face masks, surgical masks, angioplast catheters, balloon catheters, disc drives, magnetic sensors, battery holding cartridges, loud speakers, phase holograms, lenses and jewelry, wherein the composition is cured by exposure to at least one type of electromagnetic radiation selected from the group consisting of ultraviolet light, visible light, electron beam, x-ray and infrared radiation.

Claim 24 (previously amended): A method of manufacturing an article comprising:

selecting portions of needles, syringes, lancets, hypodermics, injectors, bodily fluid collector sets, cannula/hub assemblies, cannula/tube assemblies, tube sets, intravenous sets, fluid delivery and withdrawal sets, suction tubes, anesthesia masks, face masks, surgical masks, angioplast catheters, balloon catheters, disc drives,

magnetic sensors, battery holding cartridges, loud speakers, phase holograms, lenses or jewelry;

applying a composition according to Claim 1 to said portions; and

polymerizing said composition to thereby assemble said portions.

Claim 25 (previously amended): A method of repairing an article, comprising:

selecting a broken article selected from the group consisting of needles, syringes, lancets, hypodermics, injectors, bodily fluid collector sets, cannula/hub assemblies, cannula/tube assemblies, tube sets, intravenous sets, fluid delivery and withdrawal sets, suction tubes, anesthesia masks, face masks, surgical masks, angioplast catheters, balloon catheters, disc drives, magnetic sensors, battery holding cartridges, loud speakers, phase holograms, lenses and jewelry;

applying a composition according to Claim 1 to said broken article; and

polymerizing said composition to thereby repair said broken article.

Claim 26 (previously amended): A method of using a one-part composition according to Claim 19 in the assembly of an article which ordinarily would be assembled by applying

onto a substrate a primer, followed by an adhesive composition, comprising:

selecting portions of needles, syringes, lancets, hypodermics, injectors, bodily fluid collector sets, cannula/hub assemblies, cannula/tube assemblies, tube sets, intravenous sets, fluid delivery and withdrawal sets, suction tubes, anesthesia masks, face masks, surgical masks, angioplast catheters, balloon catheters, disc drives, magnetic sensors, battery holding cartridges, loud speakers, phase holograms, lenses or jewelry;

applying a composition according to Claim 1 to said portions; and

polymerizing said composition to thereby assemble said portions.

Claim 27 (previously amended): The composition according to Claim 19, having a viscosity within the range of about 1 to about 15 cps.

Claim 28 (previously amended): The composition according to Claim 19, having a viscosity within the range of about 100 to about 300 cps.

Claim 29 (previously amended): The composition according to Claim 19, having a viscosity within the range of about 600 to about 1000 cps.

Claim 30 (previously amended): The composition according to Claim 19, for use in the manufacture of articles using a wicking application.

Claim 31 (original): The composition according to Claim 27, for use in the manufacture of articles having molded polymeric parts to be bonding together.

Claim 32 (original): The composition according to Claim 28, for use in the manufacture of articles having porous substrates with gaps greater than about 0.5 mil therebetween,

Claim 33 (previously added): The composition according to Claim 1, which cures to provide a non-tacky surface in less than 5 seconds.

Claim 34 (previously added): The composition according to Claim 1, wherein the photoinitiator is a member selected from the group consisting of UV photoinitiators, visible light photoinitiators, UV/visible light photoinitiators, and combinations thereof.

Claim 35 (previously added): The composition according to Claim 1, wherein the photoinitiator is a member selected from the group consisting of dl-camphorquinone, bis(η -2,4-cyclopentadien-1-yl)-bis[2,6-difluoro-3-(1H-pyrrol-1-yl)phenyl]titanium, and combinations thereof.

Claim 36 (previously added): The composition according to Claim 1, wherein the composition has a viscosity in a range selected from the group consisting of 1-3 cps, 1-15 cps, 100-300 cps, and 600-1000 cps.